

Space-Based Infrared System (SBIRS)

The Space-Based Infrared System (SBIRS) replaces the current Defense Support Program (DSP). SBIRS improves support to theater CINCs, U.S. deployed forces, and allies, by providing better data quality and timeliness in four mission areas: Missile Warning, Missile Defense, Technical Intelligence, and Battlespace Characterization.

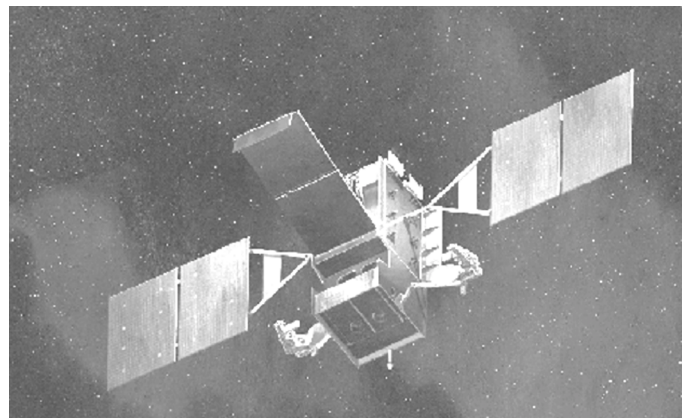
The SBIRS is being acquired in three increments:

- **Increment 1:** which attained Initial Operational Capability in FY02, consolidated DSP and Attack and Launch Early Reporting to Theater ground stations into a single CONUS Mission Control Station (MCS). Increment 1 operates with DSP satellite data.
- **Increment 2:** upgrades Increment 1 software and hardware to operate SBIRS High satellites. SBIRS High includes four satellites in Geosynchronous (GEO) orbit, with the first launch expected in FY07, and two hosted payloads in Highly Elliptical Orbit (HEO), first available in FY03. A fifth GEO satellite will be procured as a replenishment/spare. SBIRS High satellites will primarily improve current DSP operational capabilities.
- **Increment 3:** will operate SBIRS Low satellites, which will provide a mid-course tracking and discrimination capability for effective ballistic-missile defense. SBIRS Low has been transferred to the Missile Defense Agency, is currently a research and development initiative, and is not further addressed in this report.

The SBIRS Increments 1 and 2 entered the Engineering Manufacturing Development phase following a Milestone II Defense Acquisition Board review in October 1996. During FY02 the Air Force made substantive programmatic changes to SBIRS Increment 2 due to a Nunn-McCurdy breach. As a result, the Air Force delayed launch of the first GEO satellites from FY04 to FY06, and rescheduled incremental deliveries of the ground segment to better align with the delayed satellite schedule.

TEST & EVALUATION ACTIVITY

- SBIRS ground segment test activity during FY02 included an Operational Utility Evaluation (OUE) of the Interim Mission Control Station Backup-1 (IMCSB-1) co-located with the Lockheed-Martin Contractor Development Facility in Boulder, Colorado. The 54-day IMCSB-1 OUE was completed on October 29, 2002. The final test report was signed by the Air Force Operational Test And Evaluation Center (AFOTEC)/CC on December 16, 2002.
- The IMCSB-1 provides an interim Increment 1 backup capability to the existing MCS facility until the MCSB is complete.
- The IMCSB-1 operates with DSP, and will be upgraded to Increment 2 capabilities in preparation for operation with HEO and GEO satellites.
- The IMCSB is operationally separate (physical security, communications, etc.), but physically located with the Contractor Development Facility; when activated as a backup operations crews from the MCS will man the IMCSB and conduct SBIRS operations.
- SBIRS space segment test activity during FY02 included HEO proto-qualification testing and HEO-1 assembly and functional testing.



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AIR FORCE PROGRAMS

- The contractor also presented Baseline Updates of the SBIRS High spacecraft and SBIRS system; GEO subsystem tests will begin in FY03.

TEST & EVALUATION ASSESSMENT

Based on results released in the IMCSB-1 final test report, the IMCSB was rated as effective and suitable and performed as well or better than the MCS during Initial Operational Test and Evaluation. The Suitable rating is an improvement over the Increment 1 Initial Operational Test and Evaluation rating primarily due to the IMCSB meeting all of its dependability requirements. Overall, the IMCSB is capable of strategic and theater missile warning, command and control of the DSP constellation, and system activation in the event of a loss of operational capability of the primary MCS.

The latest SBIRS re-baseline provided some schedule relief to the high concurrency between the Increment 2 ground and space segments. However, the schedules remain tight, with little recovery time available for problem correction.

For Test and Evaluation, we are concerned with the delivery schedule for system-level models and simulations (M&S) for Operational Test and Evaluation (OT&E). The tool required for OT&E of the multi-satellite certification (FY09) and GEO-capable multi-mission mobile processors (FY09) is the Simulation Over Recorded Data (SORD) M&S tool that began development in FY03. However, there is insufficient time between final GEO deployment and OT&E to accommodate scenario development and the necessary level of verification, validation, and accreditation. Furthermore, the solar flyer configuration for GEO satellites complicates the clutter rejection function, impacts GEO coverage capability, and complicates any M&S validation activities.